



**MODIFICATIONS TO THE ACME 22.5-0.1 POWER SUPPLIES
AND CURRENT READOUT LINES**

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In the N3 beam line there were two major problems associated with the 100 ampere ACME power supplies:

- A) The stepping motor used to remotely control the output current would respond autonomously to the large transients associated with the power supply at certain levels of output current.
- B) The transducer output signal fed to the A.D.C. in the CAMAC rack had an inordinate amount of noise causing the displayed values of the current to vary widely although the actual output current had a 360 Hertz, peak-to-peak ripple of about 0.2 ampere at most.

The solution of the stepping motor problem was simply to reposition and filter the 24-volt power to the stepping motor P.C. board. The object in this solution was to keep the 24-volt power leads to the P.C. board as short as possible and at the same time running them in the minimum noise environment. Figure 1 indicates the physical and electrical details of the solution.



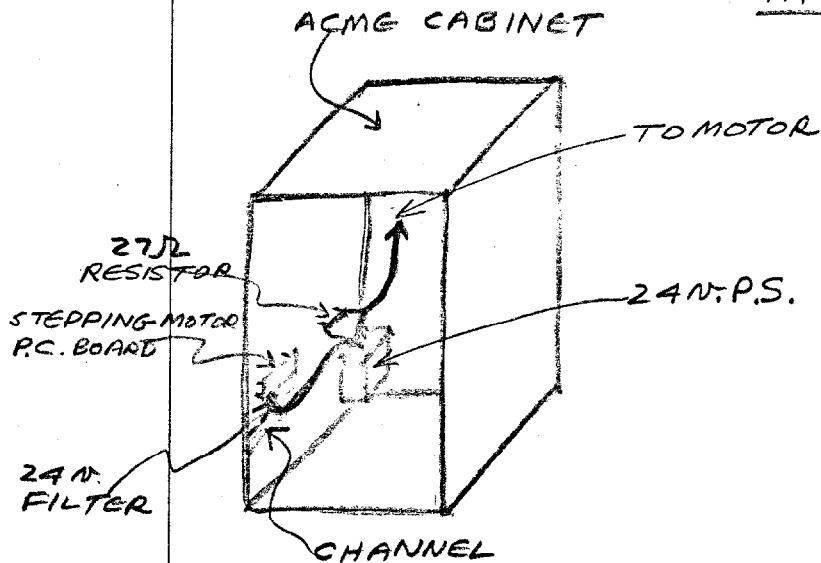
The transducer output signal was subdued by filtering at the point of entry to the CAMAC rack and further refined by correctly connecting its filtering coils. Figure 2 shows the correction connections for the transducer for both positive and negative output voltages. The ACME supply is designed with a negative transducer output and the actual transducer assembly is evidently installed for the more usual positive output. Therefore, to prevent coils 3 and 4 from saturating they must be reversed as indicated in Figure 2.

The CAMAC filter of the transducer output is indicated in Figure 3. It is conveniently installed as part of the jumpers that connect the power supply to the A.D.C. in the CAMAC rack.

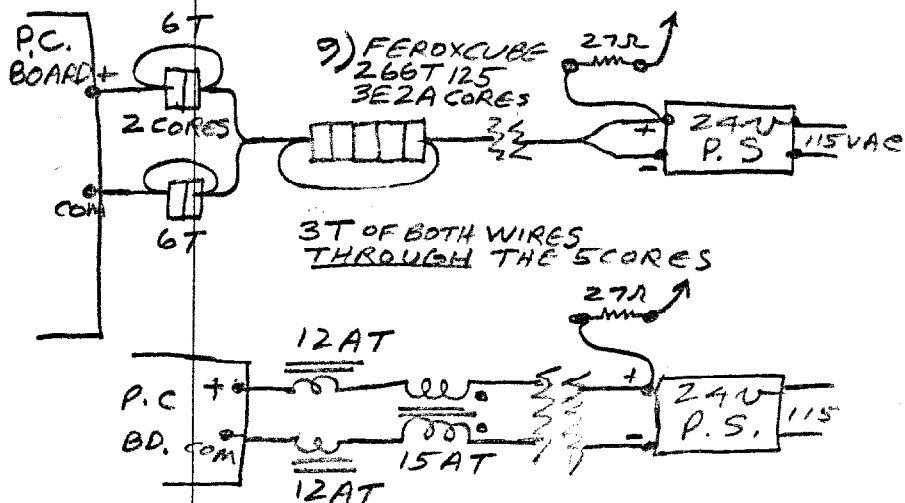
Since the ACME supply is operated in the static D.C. mode, further filtering would improve the transducer signal display if it is considered worth the effort. Presently the maximum variation in displayed signals is about 2 amps maximum. Figure 4 indicates the situation with only the CAMAC filter modification; and Table 1 shows the improvement achieved by first adding the CAMAC filter, and then correctly connecting the transducer, on the maximum range of display values.

5/29/72 BR2

FIG 1 STEPPING MOTOR P.C BOARD
MODIFICATIONS



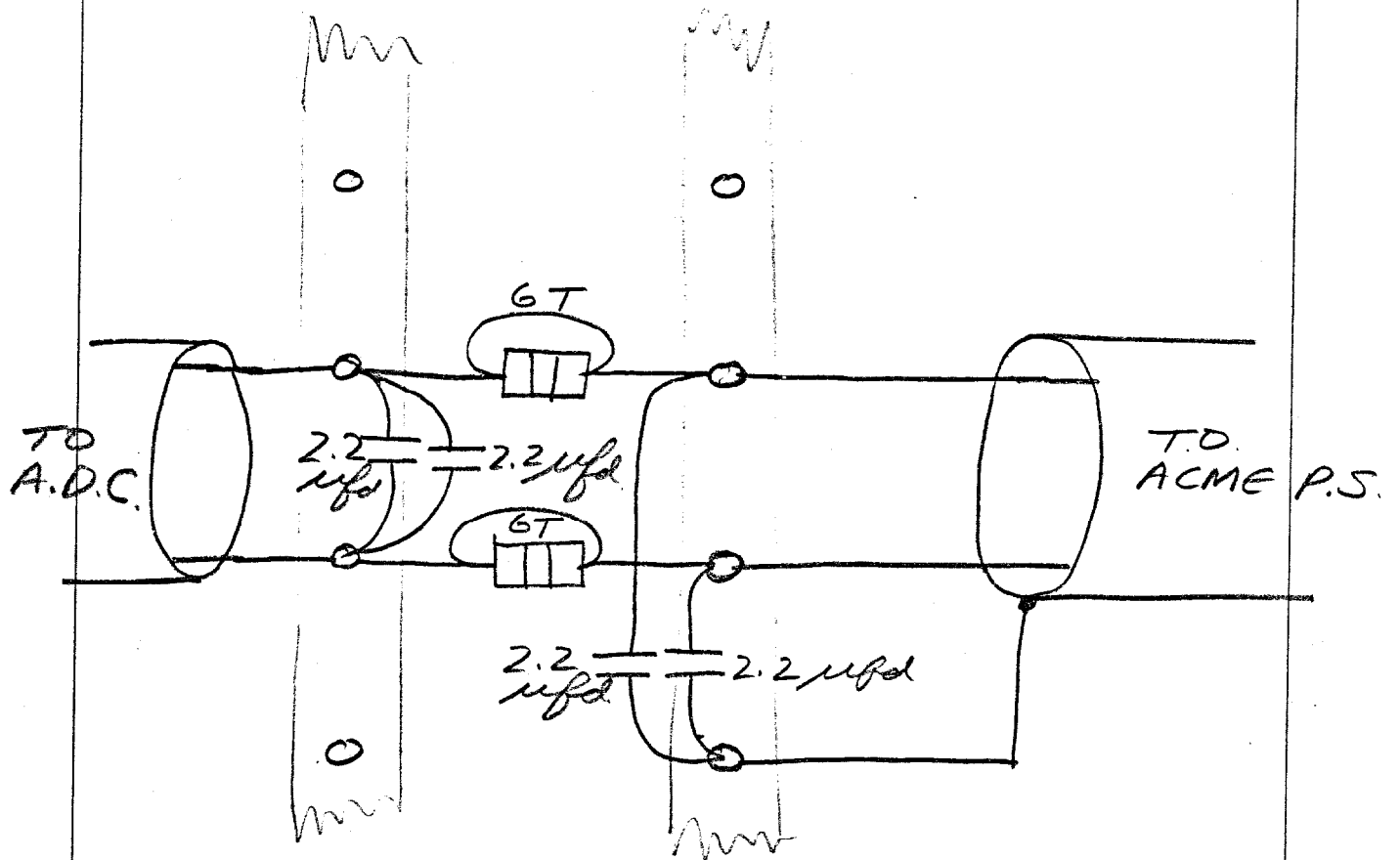
- 1) MOUNT THE 24V P.S WITH THE D.C. OUTPUT TERMINALS FACING UPWARD
- 2) MOUNT THE STEPPING MOTOR 2" ABOVE THE HORIZONTAL CHANNEL NEAR THE FRONT OF THE CABINET.
- 3) KEEP THE CABLE FROM THE 24V PS TO THE P.C. BOARD AGAINST THE CABINET WALL AND BELOW THE P.C. BOARD.



- 4) MOUNT THE 27Ω , 11W RESISTOR NEAR AND ABOVE THE $24V$ P.S. (BE SURE TO USE 2) $+24V$ WIRES: ONE TO THE P.C. BOARD AND THE OTHER TO THE 27Ω RESISTOR.).
- 5) INSTALL THE $24V$ FILTER AS NEAR TO THE P.C. BOARD AS POSSIBLE.

5124/72 BR2

FIG 3 CAMAC FILTER FOR
TRANSDUCTOR OUTPUT



AVERAGE ADC OUTPUT - AMPS.

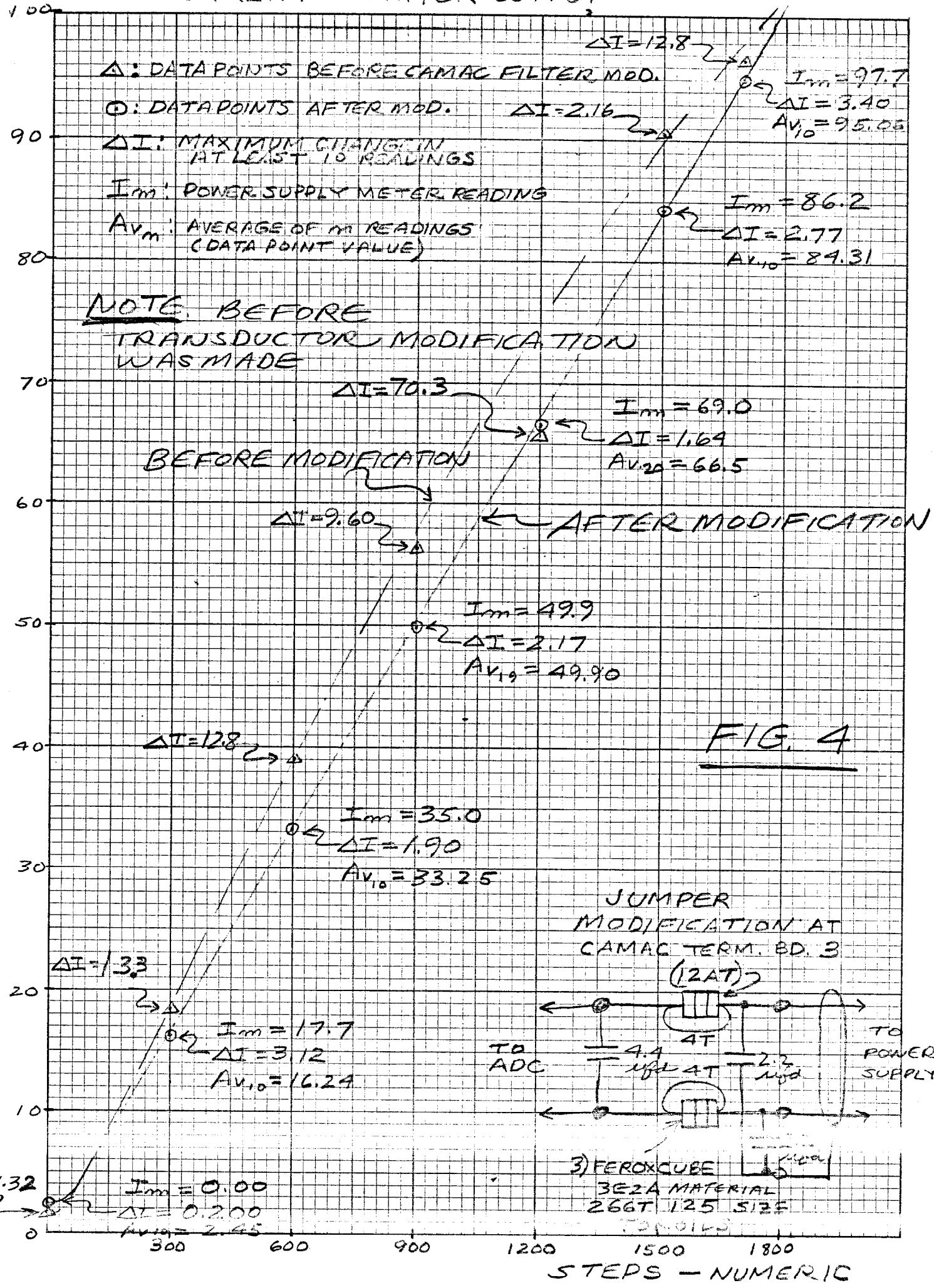


TABLE 1

MAXIMUM RANGE OF DISPLAYED VALUES
OF CURRENT

NO. OF STEPS	ΔI_m NO MODIFICATION	ΔI_m CAMAC FILTER	ΔI_m CAMAC FILTER X-DUCTOR MOD
0	1.30 ₁₁	0.20 ₁₀	0.27 ₁₇
300	13.3 ₁₈	3.12 ₁₀	1.40 ₁₇
600	12.8 ₁₇	1.90 ₁₀	1.97 ₁₅
900	9.6 ₂₇	2.17 ₁₉	2.00 ₁₅
1200	70.3 ₂₇	1.64 ₂₀	2.39 ₁₆
1500	2.16 ₂₀	2.77 ₁₀	2.16 ₁₆
1700	12.8 ₁₂	3.40 ₁₀	2.18 ₁₉

WHERE SUBSCRIPT m INDICATES THE
NUMBER OF SAMPLES, AND ΔI
IS THE MAXIMUM RANGE OF THE m
SAMPLES

5/23/72 BRJ